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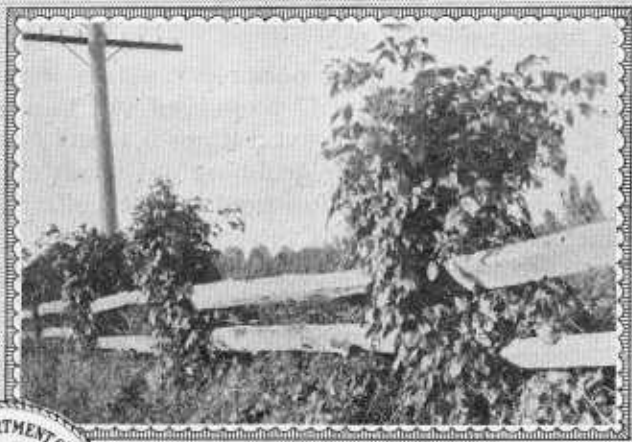
U. S. DEPARTMENT OF AGRICULTURE

U. S. Department of Agriculture

FARMERS' BULLETIN No. 1166

May 1929

POISON IVY *and* POISON SUMAC *and* THEIR ERADICATION



MANY PERSONS obtain their first acquaintance with poison ivy or its relative, poison sumac, by being painfully poisoned, sometimes as the result of collecting the foliage for ornamental purposes, not knowing its poisonous character.

In many localities poison ivy grows so abundantly as to discourage attempts to destroy it. Even where the plant is less abundant, cases of accidental poisoning must be expected. The very large number of these cases, however, could be greatly reduced if simple means of recognizing the plants, of avoiding poisoning by them, and of destroying them were more generally understood.

As a preventive measure, thorough washing is recommended, since the poison usually requires some time to penetrate into the tender layers of the skin, and until such penetration has taken place much or all of the poison can be removed. Ordinary alkaline kitchen soap is best for this purpose. A thick lather should be produced and the washing repeated several times, in running water if practicable. Solutions of certain salts of iron have also been found useful as preventives.

Methods of destroying poison-ivy plants include spraying with salt brine (3 pounds of salt to a gallon of water), repeated several times if found necessary, pulling by hand or grubbing out small areas, and (in fields) plowing followed by the cultivation of hoed crops.

Poison sumac usually occurs in swampy, inaccessible locations where the expense of eradication is not warranted. When it grows along the edges of paths or roads or in frequented places it can be killed by thorough grubbing or by applying dry salt or other weed-killing chemicals around the base of the plants.

POISON IVY AND POISON SUMAC AND THEIR ERADICATION

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IVY AND SUMAC POISONING LARGELY PREVENTABLE

Although it is generally known that contact with poison ivy and poison sumac may cause painful inflammation of the skin, many persons are poisoned because they do not know how to recognize and avoid these plants. Much injury is caused by permitting poison ivy to spread year after year along roadways and much-used paths, frequently in small patches that could be destroyed with comparatively little effort or expense. Accidental cases of ivy and sumac poisoning are to be expected, but the very large number of such cases could be greatly reduced if simple means of detecting and dealing with the plants and of preventing their poisonous effects were more generally understood.

THE POISON-IVY PLANT

The poison-ivy plant is known by various local names, such as three-leaved ivy, poison creeper, climbing sumac, markweed, picry, and mercury. Several different kinds of plants are called poison ivy. Sometimes the name is applied to the plant more commonly known as poison oak. Poison ivy grows in the form of woody vines, trailing shrubs, or low, erect bushes and adapts itself to a great variety of conditions. It flourishes in woods or in the open, in low, moist soil

¹ This edition of this bulletin has been revised by Frederick V. Coville, Principal Botanist in Charge, and M. W. Talbot, Senior Botanist, Office of Botany; and A. F. Sievers, Senior Biochemist, Office of Drug and Related Plants, Bureau of Plant Industry. The first edition, issued in 1920, was based largely on an article entitled "Ivy and Sumac Poisoning," prepared in collaboration between the Public Health Service and the United States Department of Agriculture and published in Public Health Reports (SWEET, E. A. and GRANT, C. V. IVY AND SUMAC POISONING. Pub. Health Rpts. [U. S.] 35: 443-458, illus., 1920), supplemented by information on eradication methods developed through experiments conducted by the Office of Forage Crops and Diseases.

or in dry soil, and on hillsides. It is especially abundant along fence rows and at the edges of paths and roadways, scrambling over rocks and walls, climbing posts or trees to considerable heights, often mixing with other shrubbery in such a way that it escapes notice until attention is attracted to it by the occurrence of cases of poisoning.

Poison ivy, including poison oak, is found in one or more forms in practically all sections of the country. The various forms, including several distinct botanical species, differ mainly in the shape and margins of the leaflets, the size of the fruit, and the habit of growth. They are so much alike in general character that familiarity with any one form will make it possible to recognize the plants wherever

encountered, whether as vines or shrubs, or at least to avoid all plants bearing a suspicious resemblance to them.

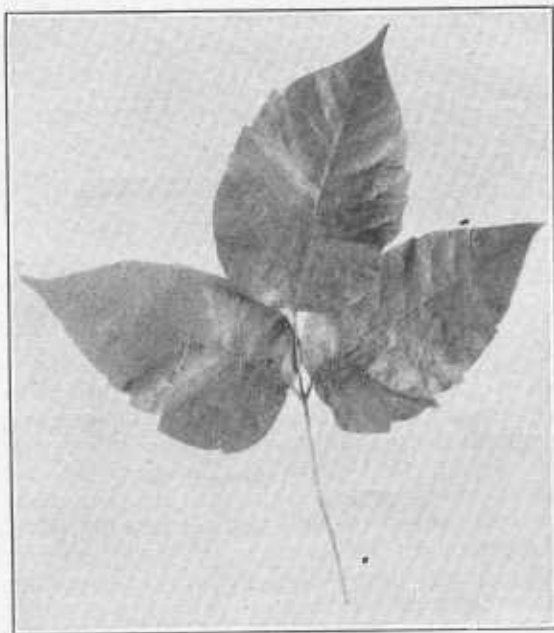


FIGURE 1.—Leaf of poison ivy (*Toxicodendron radicans* (L.) Kuntze). The poison-ivy leaf is always divided into three leaflets

HOW TO DETECT POISON IVY

The poison-ivy plants are most readily recognized by their leaves, which are always divided into three leaflets in the manner shown in Figure 1, and by their whitish, waxy fruits, which look somewhat like mistletoe berries, each containing a single, stony seed. The homely saying, "Leaflets three, let it be," offers a measure of safety to those who are unacquainted with poison ivy, even

though it may occasionally lead to undue suspicion and the avoidance of some innocent or harmless plant. The plants do not all bear fruits, but when discovered the whitish or cream-colored berries (more correctly called drupes) shown on the fruiting specimen in Figure 2 make recognition positive. These remain far into the winter and thus point out the plants long after their leaves have fallen.

DESCRIPTION OF THE POISON-IVY PLANT

The vines of poison ivy spread underground by rootstocks, sending up an abundant, shrubby growth, the branches tending to ascend any convenient support, attaching themselves by many small roots, as illustrated in Figure 2, but lacking the coiled tendrils found on many climbers.

When growing as an erect bush or trailing shrub, poison ivy attains a height varying from a few inches to about 3 feet. In favorable situations it may make a luxuriant, bushy growth 4 to 5 feet high.

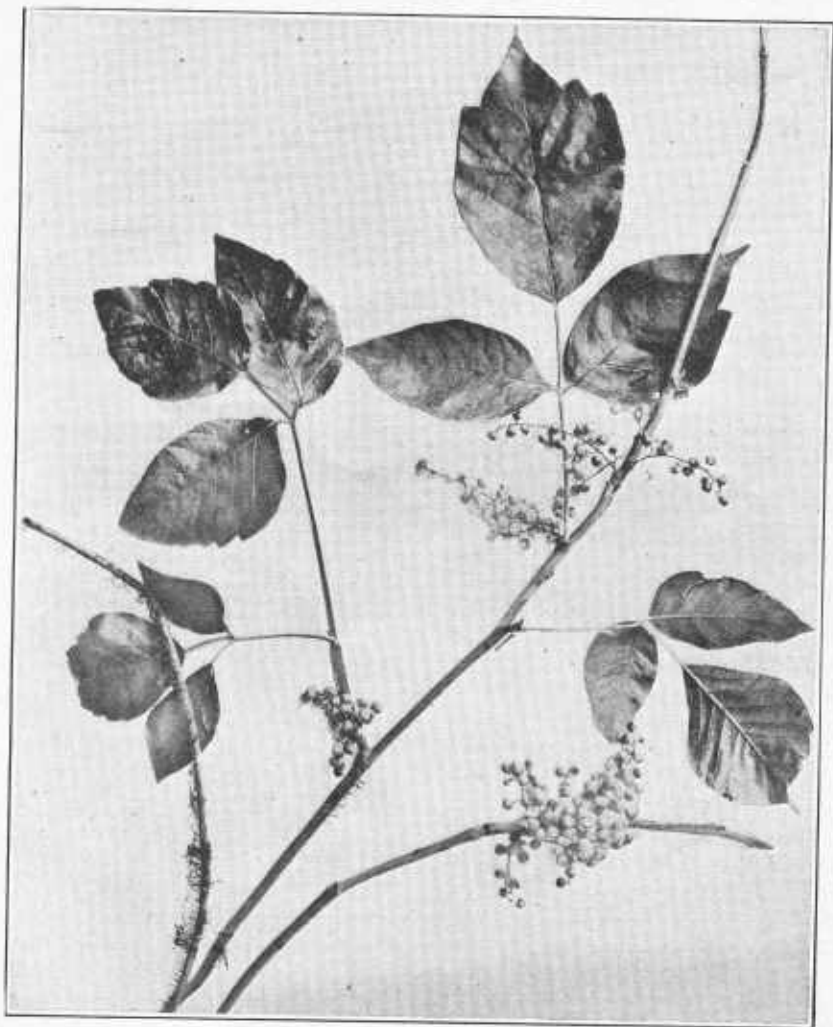


FIGURE 2.—Poison ivy (*Toxicodendron radicans* (L.) Kuntze). Branches of the poison-ivy vine, showing the leaves, fruit, and aerial rootlets

The leaves of all forms have stout, rather long stalks, bearing three leaflets, two of which are opposite and short stalked, while the end leaflet is long stalked. The leaflets vary from 1 to 4 inches in length and when mature are dark green on the upper surface, lighter and sometimes velvety underneath. The crinkly young leaves are red when they first unfold, becoming green with the advance of mild weather, and turning in autumn to beautiful shades of scarlet and

orange. In lieu of a description of the variability in the shape and margins of the leaflets, it will be less confusing to refer to Figures 1, 2, and 3, which illustrate the general range of these variations and at the same time show the striking similarity in the leaves of all forms. The tendency of the leaflets to form irregular, notched, or indented margins is an aid in recognizing the plants, and in leaflets

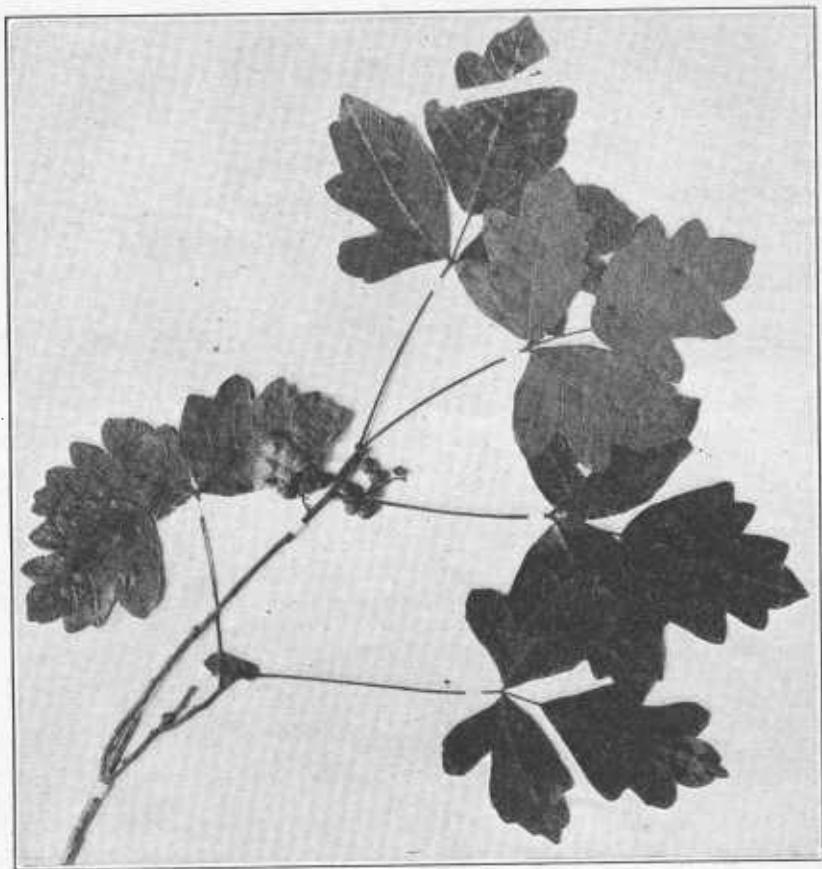


FIGURE 3.—Oakleaf poison ivy (*Toxicodendron quercifolium* (Michx.) Greene) of the eastern United States

with generally even margins a deep notch or several indentations on the side (figs. 1 and 2) will often serve to confirm their identification as poison ivy.

The small, 5-petaled, yellowish green flowers appear in early summer in clusters 1 to 3 inches long, growing out of the angles between the leafstalk and the plant stem or above scars along the sides of the branches. They are followed by small, roundish, smooth, green fruits about one-fourth inch in diameter, which become white or ivory colored as they ripen.

LOCAL FORMS OF THE POISON-IVY PLANT

The forms² in which the plants are found vary in different sections of the country. In the eastern and central portions of the United States, poison ivy occurs as a vine, trailing shrub, or bush, with leaves similar to those of the specimen shown in Figure 2;³ also as a low, erect, small-fruited bush, which in many localities in the northern part of this region is the only form seen and is sometimes called poison oak. In the region from New Jersey, Delaware, and Virginia

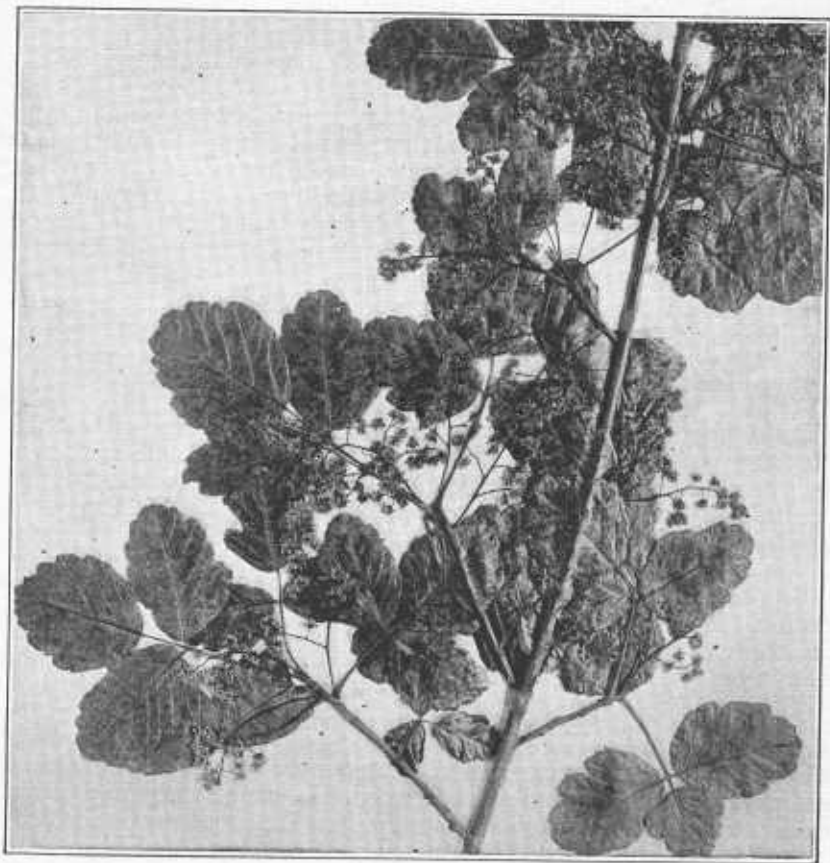


FIGURE 4.—Poison oak (*Toxicodendron diversilobum* (Torr. and Gray) Greene) of California and the Pacific coast. Portion of the branch in flower

south and southwestward occurs another species, the oak-leaf poison ivy, sometimes called poison oak,⁴ which does not climb. Its leaflets, shown in Figure 3, resemble those of certain eastern oaks. West of this region, extending from South Dakota and British Columbia to

² Poison ivy and poison sumac comprise a toxic group which has generally been placed by botanical authors under the genus *Rhus*, but which is here treated under the generic name *Toxicodendron*.

³ *Toxicodendron radicans* (L.) Kuntze (*Rhus radicans* L.).

⁴ *Toxicodendron quercifolium* (Michx.) Greene (*Rhus toxicodendron quercifolium* Michx.). The name *R. toxicodendron* has been applied to this plant by some authors, but it is usually treated as referring to the poison-ivy vine, *T. radicans*.

Oklahoma and Arizona, these forms of poison ivy are replaced by western poison ivy,⁵ sometimes called poison oak, a thicker leaved low bush or trailing shrub which does not climb.

CONFUSION OF POISON IVY WITH POISON OAK

In the Pacific coast region the plant generally known as poison oak⁶ occurs usually as an erect bush 4 to 8 feet high, with variable leaflets (fig. 4) bearing some resemblance to the leaves of certain western oaks, and with somewhat pendulous clusters of greenish flowers, followed by small, whitish, berrylike fruits. Poison oak is also found as a climbing vine and sometimes is called poison ivy or yeraa.

It may be noted that in the eastern United States some forms of poison ivy (particularly those that do not climb) having leaflets resembling the leaves of certain oaks, are often called poison oak. This name is often used popularly to distinguish such forms from poison-ivy vines. Since climbing forms are found with oak-leaved foliage, and leaflets of the vine forms of poison ivy are frequently more or less lobed like oak leaves, efforts to make this distinction between poison ivy and poison oak are confusing, and many persons use either name for all forms of the plants.

CONFUSION OF POISON IVY WITH VIRGINIA CREEPER

In the Eastern States and westward as far as Wyoming and Texas, Virginia creeper⁷ is found generally in the same locations as poison-ivy vines, often mixing with the ivy growth, which it resembles in its climbing habit and in the shape of its leaflets. In this way it is sometimes confused with poison ivy, but it is harmless to the touch and is readily distinguished by its leaves, which usually bear five leaflets to a stalk, as shown in Figure 5. It climbs partly by aerial rootlets, like those of poison ivy, but it also has numerous tendrils, like those of grapevines, and it has red-stemmed, blue fruits, each containing two or three seeds.

THE POISON-SUMAC PLANT

Poison sumac⁸ is also known as swamp sumac, poison elder, poison ash, poison dogwood, and thunderwood. It grows only in swamps or in wet ground. It is found from the New England States south as far as Florida and westward to Minnesota, Arkansas, and Louisiana. It grows as a shrub in clumps, with tall, slender stems 6 to 10 feet or more in height; and frequently it grows as a tree up to 20 or 30 feet high, with a trunk 5 to 10 inches in diameter.

HOW TO DETECT POISON SUMAC

The leaves of poison sumac are divided into 7 to 13 leaflets, arranged in pairs, with a single leaflet at the end, as shown in

⁵ *Toxicodendron rydbergii* (Small) Greene (*Rhus rydbergii* Small). By some authors this is considered only a low form of *T. radicans*.

⁶ *Toxicodendron diversilobum* (Torr. and Gray) Greene (*Rhus diversiloba* Torr. and Gray).

⁷ *Parthenocissus quinquefolia* (L.) Planch.

⁸ *Toxicodendron vernix* (L.) Kuntze (*Rhus vernix* L.).

Figure 6. The avoidance of shrubs growing in low land and having leaves of this general character is a safe rule for persons not well acquainted with poison sumac, although it may lead to needless avoidance of some harmless plants. The cream-colored fruits of poison sumac, resembling those of poison ivy but growing in looser clusters, 3 to 8 inches long, remain through the winter and make recognition positive. Poison sumac grows only on wet land, but sometimes occurs in unsuspected places along roadways at the edges of swamps or along low, miry banks of streams.

DESCRIPTION OF POISON SUMAC

The poison-sumac bush or tree has smooth, grayish bark on the trunk and older branches, whereas the young, new branches are reddish brown. The leaves vary from 7 to 14 inches in length and consist of a clean stalk bearing 7 to 13 leaflets, arranged opposite one another in pairs, with a single, usually long-stalked, leaflet at the end. The leaflets, which are of an elongated oval shape without teeth on the margins, grow from 3 to 4 inches long and $1\frac{1}{2}$ to 2 inches wide. They are velvety and of a bright-orange color when they first appear in the spring, later be-

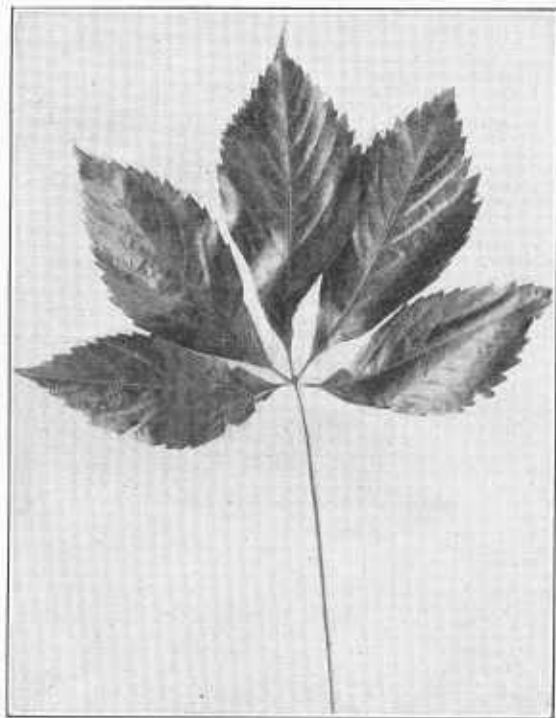


FIGURE 5.—Leaf of Virginia creeper (*Parthenocissus quinquefolia* (L.) Planch.) Note that the leaf is divided into five leaflets

coming dark green and glossy on the upper surface, with prominent scarlet midribs and paler green underneath. They turn early in autumn to brilliant red, orange, and russet shades. The small, 5-petaled, yellowish green flowers appear early in summer in loose, slender clusters about 3 to 8 inches long, growing out of the angles of the leaf-stalks near the ends of the branches. They are followed by shining ivory-white or cream-colored fruits resembling those of poison ivy, about one-fourth inch in diameter, each containing a single stone.

CONFUSION OF POISON SUMAC WITH HARMLESS SUMAC AND OTHER PLANTS

As suggested by the names applied to it, poison sumac is often confused with elder, certain kinds of ash, and various other shrubs and trees bearing somewhat similar foliage; also with dogwood, to which it bears no resemblance. It is at once excluded from plants

growing in high, dry locations, though it is sometimes found at the edges of swamps and bogs or where the ground is somewhat dry during part of the year. Its loose, drooping clusters of flowers, followed by smooth, ivory-white fruits, are readily distinguished from the dense, upright, terminal flower clusters of the harmless sumacs (conspicuously red in the fruiting stage) and from those of other shrubs with which it is confused. The leaflets, 7 to 13 in number, are borne on plain, round stalks and have a tendency to fold forward

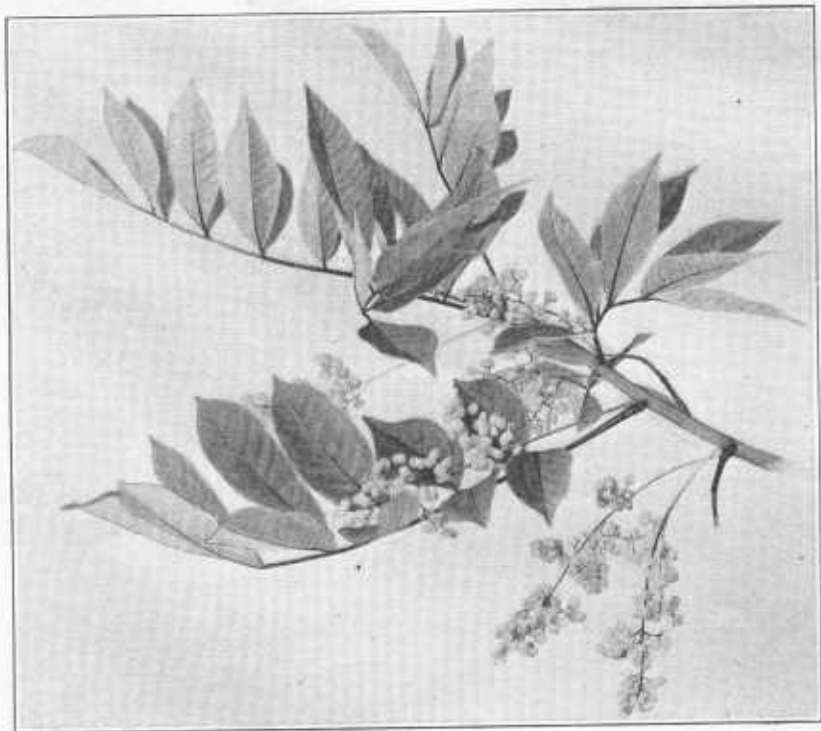


FIGURE 6.—Poison sumac (*Toxicodendron vernix* (L.) Kuntze). From a water color by F. A. Walpole

in the manner shown in Figure 6. In the harmless sumacs the leaves bear 9 to 21 leaflets, or even 31 leaflets in the commoner species. Other differences are the winglike growth along the margins of the leafstalks of the dwarf sumac and the hairy covering of the leafstalks and twigs of the staghorn sumac.

POISONOUS ACTION OF POISON IVY AND POISON SUMAC

Poison ivy and poison sumac are close relatives and are similar in their poisonous properties. Their poisonous principle is a non-volatile, oily substance known as toxicodendrol, which has such violently irritant properties that the slightest trace deposited on the skin is capable of producing severe inflammation. All parts of the plant contain the poison, even after long drying, but growth in which the sap is abundant is the most dangerous.

Poisoning is usually caused by touching or brushing against the plants or by handling clothing or other articles that have been in contact with them. On the other hand, many persons are convinced that they have been poisoned by particles carried through the air, when passing by the plants or observing them from a short distance, without actually touching them. There is much difference of opinion and conflicting evidence on this point. Many sensitive individuals find that they are fully protected by avoiding actual contact with the plants or with articles contaminated with the poison. It is well known, however, that smoke from the burning plants will carry the poison and may cause serious injury.

Many persons believe themselves immune to ivy poison and seem to be able to handle the plants freely without harm. Experience and experiments seem to show, however, that complete immunity to ivy poisoning does not exist, and many supposedly immune persons have not only been poisoned by carelessly handling the plants, but afterwards have suffered attacks on the slightest exposure.

Taken internally in sufficient dose, the plant is a violent irritant poison. Cases have been reported of children who have been poisoned by eating the ripe fruits.

The symptoms of ivy poisoning are produced as the irritant poison penetrates the outer surface of the skin, and they may appear within a few hours or be delayed until five days or longer after exposure. Itching or burning sensations, with reddening of the poisoned surfaces and more or less swelling, are first noticed, usually followed by the appearance of small vesicles, which may show a tendency to run together and form blisters. Pus may form in these vesicles, followed by the formation of a crust or scab as the eruption dries. The acute symptoms of the attack usually continue to develop for a day or two, followed by gradual improvement as the effects of the irritant wear off.

PREVENTION OF IVY POISONING

Those who are sensitive to ivy poisoning should not only avoid touching the plants, but also should use care in handling articles which may have been in contact with them. Contaminated shoes, clothing, or tools are sources of poisoning sometimes overlooked, as are also animals that have access to poison-ivy patches.

While poison ivy is sometimes so abundant as to make complete eradication practically impossible, plants occurring along paths and in frequented situations should be destroyed.

After exposure to poison ivy, measures to insure the removal of the poison are of primary importance. It should be remembered that at first the poison is on the surface of the skin and can be removed by thorough washing and rinsing repeated several times. Careless washing, however, may serve to spread the poison. Ordinary kitchen or laundry soap which has an excess of alkali is best for the purpose, and hot water should be used. The soap should be applied freely, so as to produce an abundant, heavy lather on the exposed surfaces, then rinsed off completely, and the operation repeated not less than three or four times. Running water is preferable, or if a basin is used the water should be changed frequently. The hands, especially the finger nails, should receive particular attention, in order to remove traces of the poison which they may harbor and transfer to

other parts of the body. Special attention should be paid to the tender skin between the fingers. Hard scrubbing with a stiff brush is not advised, as it may serve to rub in the poison and stir up infection; but there is no objection to wash rags, provided several are used and each discarded in turn. The poison can also be removed by cleansing the exposed parts repeatedly with alcohol diluted with an equal quantity of water. Alcohol merely dissolves the poison and unless applied with caution, insuring its complete removal, will spread it over wider areas. The alcohol may be dabbed on with a piece of absorbent cotton, promptly removing it with a dry piece, discarding each piece of cotton as used and repeating the procedure a number of times.

Some of the salts of iron which have a neutralizing effect on the poison are reported⁹ to have been used with good results as preventives. A solution of 5 parts of ferric chloride in 95 parts of a half-and-half mixture of water and glycerin, also a solution of 1 part of ferrous sulphate in 5 parts of water, have been recommended as local applications for this purpose. Either of these solutions may be applied freely to the exposed parts of the body and allowed to dry there before going into a region where contact with poison ivy is probable. Such solutions are also of much benefit if they are used as soon as possible after there has been actual contact with the plant.

REMEDIES FOR IVY POISONING

Mild cases of ivy poisoning usually subside within a few days and do not cause alarm, but fatal cases have occurred. When the inflammation is extensive or severe, a physician should be consulted. Since the inflammation may continue to develop for several days, while the irritant is being slowly absorbed into the tender layers of the skin, it is not surprising that remedies tried in the early stages may prove disappointing. If they are discarded in favor of some other remedy just as the poison becomes exhausted the rapid improvement then noted may cause the last remedy to be regarded as a sure cure.

Thorough washing, in the manner described as a preventive, should be tried even after the inflammation has developed, in order to remove from exposed surfaces of the skin all traces of the poison that can still be reached.

A 5 per cent solution of potassium permanganate applied locally is reported¹⁰ to be a very good remedy. The brown stain caused by this solution will gradually wash off, or it may be removed more rapidly with lemon juice or with a 1 per cent solution of sodium bisulphite.

For the inflammation, simple remedies, such as local applications of solutions of cooking soda or of Epsom salt, one or two heaping teaspoons to a cup of water, are ordinarily as helpful as any. Fluid extract of grindelia, diluted with 4 to 8 parts of water, is often used. Solutions of this kind may be applied with light bandages or clean

⁹ Interest in the use of iron salts for the prevention of ivy poisoning and of permanganate of potash as a remedy has been increased by recent experiments of J. B. McNair, Field Museum, Chicago; George D. Fuller, University of Chicago; and J. F. Couch, Bureau of Animal Industry, U. S. Department of Agriculture. Results and recommendations were published in an article in the *Literary Digest*, as follows: THONE, F. IRON-TREATMENT FOR POISON-IVY. *Lit. Digest* 90 (4): 22-23, illus. 1926.

¹⁰ See footnote 9.

cloths, which should be kept moist and should also be changed and discarded frequently in order to avoid infection. During the night, or when moist applications can not be used, the poisoned surfaces should be carefully cleaned and dried and left exposed to the air rather than tightly bandaged. Immersing the poisoned parts for several minutes in water as hot as can be borne, or applying hot towels where this is impracticable, is much recommended for the itching. This measure increases the discomfort at the moment of application, but it is followed by a period of great relief. In the early stages remedies with a fatty or oily base, such as ointments, should not be used, as grease or oil tends to dissolve and spread the poison. In the later stage, after the toxic material has exhausted itself, zinc-oxide ointment and similar mild antiseptic and astringent applications hasten healing.

A simple formula¹¹ useful at both the late and early stages is the following, which may be dabbed on the poisoned parts after a thorough cleansing or applied by saturating one or two thicknesses of a light bandage:

Zinc oxide-----	15 grams.
Phenol -----	2 grams.
Lime water to make 250 cubic centimeters.	

ERADICATION

In undertaking the eradication of poison ivy and poison sumac it would be preferable to employ the occasional persons who are practically immune to ivy or sumac poisoning. Workmen unfamiliar with the plants should be warned of the risk involved and advised that leggings, long leather gloves, and heavy work shirts offer considerable protection. In the absence of leggings and gauntlets, the trouser cuffs should be snugly tied around the tops of the shoes, and the shirt sleeves connected in similar manner to the cuffs of short gloves. All articles of clothing coming in contact with the plants should afterwards be removed. The poison adhering to such articles may make them a source of harm for an indefinite period. Thorough washing in the manner previously recommended (as a preventive) should invariably be practiced after exposure to the plants, and similar precautions should be observed in the washing of clothing or articles contaminated with poison. Workmen should be warned against touching the clothes to the face, or permitting twigs of poison ivy to brush against the face.

In burning dried, uprooted plants, care should be taken to keep away from the poisonous smoke.

ERADICATION OF POISON IVY

The poison-ivy plant is difficult to destroy, and in undertaking its eradication it should be borne in mind that the tops arise from creeping, underground stems which spread in all directions a few inches below the soil surface, and from these stems new branches or shoots arise at frequent intervals. Methods of eradication and control follow.

¹¹ WHITE, J. C. *DERMATITIS VENENATA: AN ACCOUNT OF THE ACTION OF EXTERNAL IRRITANTS UPON THE SKIN.* 216 p. Boston. 1887.

Chemical methods.—Of the various weed-killing chemicals that may be used for killing poison ivy, common salt and oils are easily obtained and fairly effective. If all the leaves can be reached by the solution, one of the most useful methods of killing the leaves and fine stems of poison ivy is to spray them with saturated salt solution. The advantage of this method is that contact with the plant can be avoided. The spray solution is prepared by adding about 3 pounds of common salt to a gallon of slightly soapy water. The spray should be applied as a fine, driving mist, using an air-pressure sprayer. Small, inexpensive hand sprayers suitable for this work are on the market.

The first spraying is most effective if done not later than the end of June. As one spraying will not kill the main stems and roots, the plants should be sprayed again as soon as the new leaves are about full grown. Sometimes three or more sprayings are required. If the spraying is persisted in, the poison ivy will gradually disappear, since underground stems are dependent upon leaves for food and will die without them.

Weed-killing chemicals that will kill poison-ivy plants may be expected to injure or kill other plants also, if applied to them in sufficient quantity. Therefore in applying salt solution to poison ivy growing near valuable trees or shrubs the safest plan is to apply only enough of the spray to wet the foliage of the poison ivy. If the soil is drenched with salt solution, injury to the soil, grass, and shallow roots of valuable plants may be expected. On the other hand, if poison-ivy vines are found on fence posts far removed from valuable trees or shrubs, where damage to the soil around the bases of the posts is unimportant, the vines may be killed by cutting them below the surface of the ground and saturating the soil around the cut bases of the plants with brine. The treatment should be repeated if necessary.

Crank-case oil, thinned with kerosene until it sprays easily and applied like the salt solution, is also effective in killing poison ivy and perhaps even more effective than salt for late-season defoliation. Oils should not be used where they are likely to come in contact with the bark of valuable trees.

Hand methods.—If willing workmen can be obtained and if the expense is justified, the most satisfactory and effective way to destroy small, isolated clumps of poison-ivy plants is to pull or grub them out, provision being made to go over the ground again at intervals of a few weeks until no more sprouts appear from root fragments.

When growing as long vines on trees, poison-ivy plants can be killed by severing their stems with an ax or a hatchet. Care should be used to chop completely through the vine, which often is found fitting in a groove of the bark of the tree. After a month or six weeks the new tops that spring from the lower portion of the vine may be pulled up or be killed with spray.

Plowing and cultivating.—When poison ivy infests grasslands or other situations where plowing is practicable, the best method of eradication is to plow the soil and plant corn or other hoed crops. The frequent cultivation given to such crops will starve the underground parts of poison ivy remaining in the soil.

Pasturing.—Livestock, particularly sheep, browse on poison ivy without apparent harm; therefore they may thus be used to hold poison-ivy growth in check in pastures. In most places, however, sheep can not be used, and other methods will be necessary to effect complete eradication of the plant.

ERADICATION OF POISON SUMAC

Since poison sumac for the most part grows in swampy, inaccessible locations, the expense of eradication is usually not warranted. However, the plant is often found at the edges of paths or roadways bordering upon moist land or on the banks of streams in frequented places where its presence is the cause of much injury. In situations of this kind it should be eradicated completely. A feature of the plant which adds to the danger is its attractive autumn foliage. Branches are often gathered by persons who are not acquainted with the harmful properties of the plant, and as a result they are painfully poisoned.

In undertaking the work of eradication, the wearing of overalls and heavy, gauntleted, leather gloves, as well as the adoption of other protective measures already recommended, are of even greater

importance than in the case of poison ivy, since the sumac plant contains the poisonous principle in greater abundance and is in consequence more dangerous.

METHODS OF ERADICATION

Available methods of eradication are the following:

Treating with chemicals.—Various chemicals, including common salt and kerosene and other oils, may be used for killing poison sumac. The cheapest grade of common salt is effective and economical.

One method of treating with salt consists of cutting the poison-sumac plants close to the ground and applying dry salt on and around the newly cut surfaces and to sprouts that may appear later.

Another method of treating with salt has been tested by the New York Agricultural Experiment Station, Cornell University.¹² The experiments have indicated that it is not necessary to cut the tops of the plants before applying salt, although it appeared probable that cutting might reduce the quantity of salt required. Under conditions prevailing in the New York experiments, dry salt was poured around the base of each bush, from 10 to 25 pounds being required to kill bushes ranging in height from 6 to 12 feet and consisting of clumps of stems from 6 to 15 in number and from 1 to 2 inches in diameter. A minimum quantity of 20 to 25 pounds of salt was required to kill the largest plants. Medium-sized bushes, 6 to 8 feet high, required at least 10 pounds. The salt applications were made in June and July.

Poultry and salt-hungry animals should not have access to sumac bushes that have been salted, because of the risk of injury from eating too much salt at one time. Moreover, animals are likely to disturb the salt before the sumac plants are killed. It is always a good plan, therefore, to cover the salt with soil, stones, or brush.

Grubbing.—Low, bushy growths of poison sumac may be removed by grubbing out the plants with a mattock. It is important to remove the roots as completely as practicable, since fragments of roots left in the ground are capable of producing new shoots.

THE BEST TIME TO ERADICATE POISON SUMAC

Wherever, as frequently happens, poison sumac grows in land that becomes dry during part of the year, the dry season is especially favorable for destroying the plants by cutting, since during this period the roots are least likely to sprout and therefore are more readily killed. To avoid the greater risk of injury incurred in handling the plants while the sap is abundant and especially during the season when the foliage is dense, making avoidance of contact very difficult, it may be preferable simply to mark the plants, so they can be identified readily after the leaves have fallen. The work of eradication may then be undertaken during the fall or winter, when it is possible to handle poison sumac with less risk. It should be remembered that severe poisoning may be caused by either stems or roots at any stage if handled without the protection of gloves and without taking other precautions to prevent the poisonous material from touching the skin. A single cutting in winter is not so effective as a single cutting in summer, however, because in winter the roots are gorged with food material, and in consequence they tend to send up sprouts profusely in the following spring. It is necessary, therefore, to kill the sprouts in the spring by a liberal application of crude salt, crank-case oil, or other chemicals, in the manner already described. Simply cutting the sprouts is ineffective unless repeated frequently throughout the growing season.

¹² MUENSCHER, W. C. Unpublished data. 1927.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

April 18, 1929

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